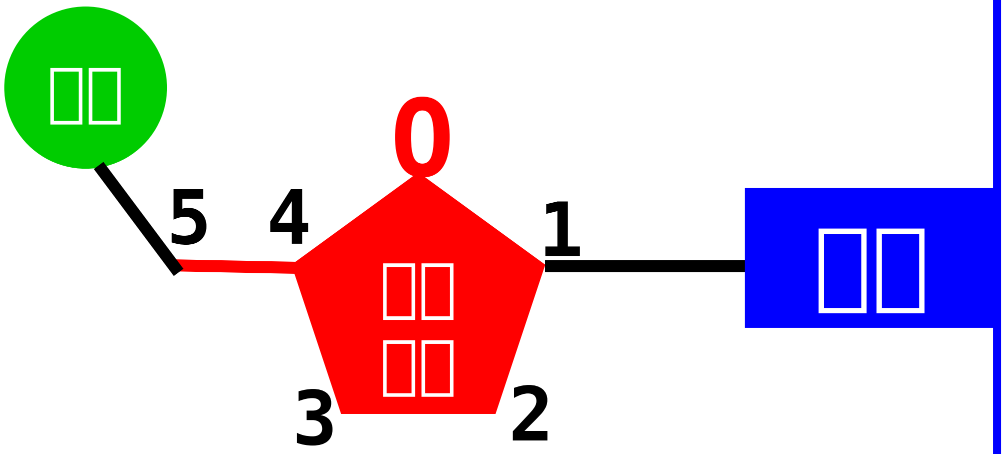
[illegible]

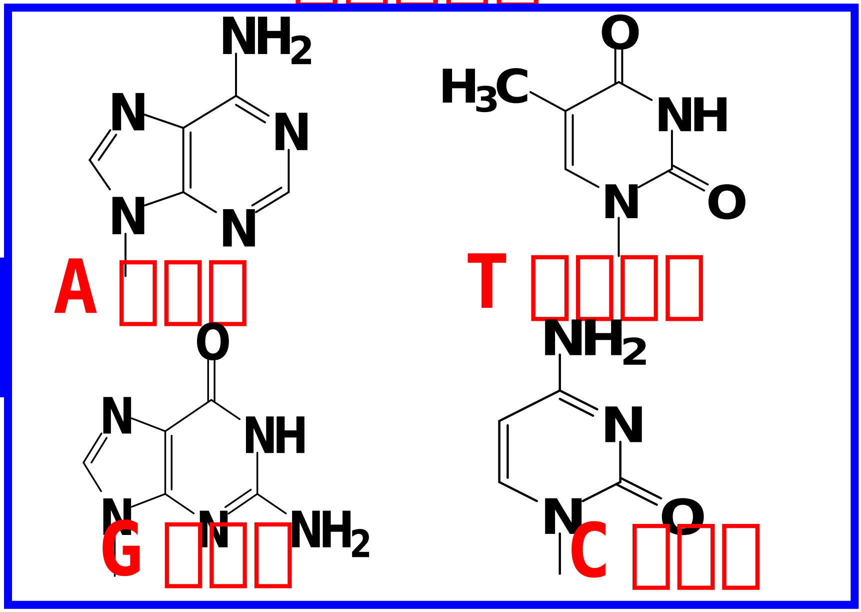
- 1. [illegible]
- 2. [illegible]
- 3. [illegible]
- 4. [illegible]

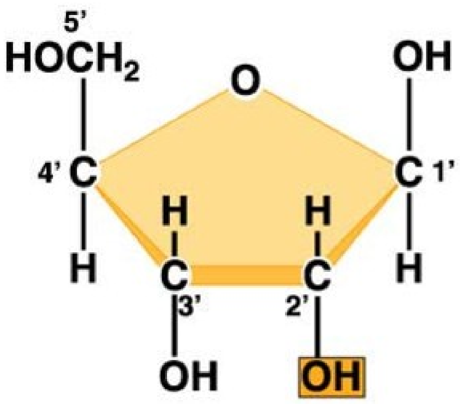
□□□　□□□□□

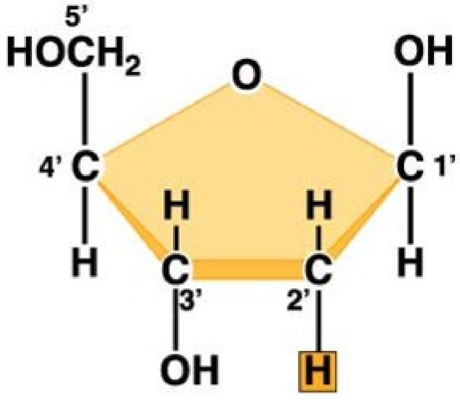
- □2□　DNA□□□□□

DNA


O
5
4
1
3
2


NH2
N
A
H3C
O
NH
T
G
C


5'
HOCH2
O
OH
4' C
C 1'
H
C
3'
2'
OH


5'
HOCH2
O
OH
4' C
C 1'
H
C
3'
2'
OH

DNA □□□□□□□□□

威尔金斯和富兰克林提供的DNA ___□□□□___

DNA 的结构单位：4 种脱氧核苷酸，分别含有 __A__、__T__、__C__、__G__ 四种碱基

↓

沃森和克里克推算出 DNA 分子呈 ___□□___ 结构

↓

尝试建立模型 { 双螺旋 / 三螺旋 } 特点 { 碱基位于螺旋的 __□__ 部 → 磷酸—脱氧核糖骨架在 __□__，碱基在 __□__，且 __□□__ 碱基进行配对 }

↓

失败

↓ ← 查哥夫提出 DNA 分子中 __A=T__，__G=C__

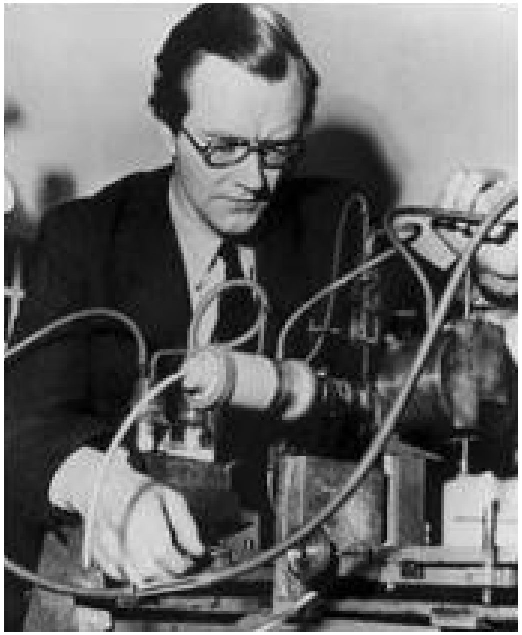
重新构建模型：让 A 与 __T__ 配对，G 与 __C__ 配对

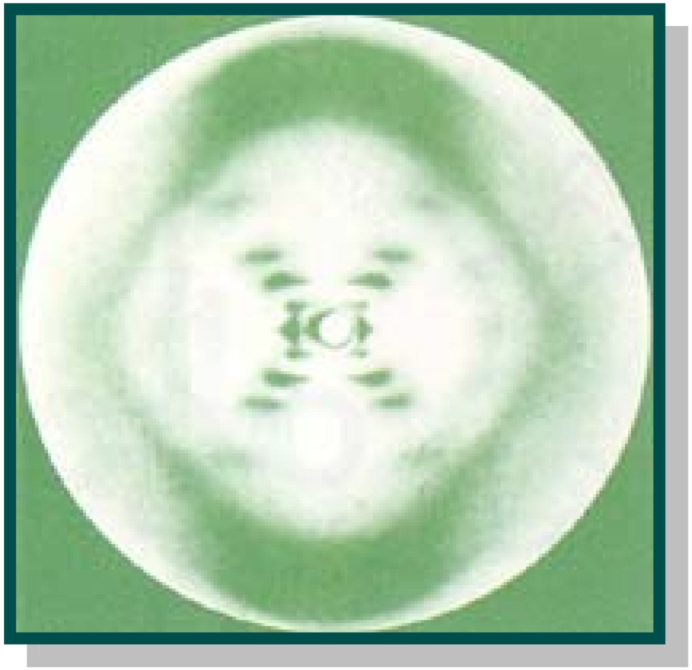
↓

形成 DNA 双螺旋结构模型

DNA □□□□□□□□□□

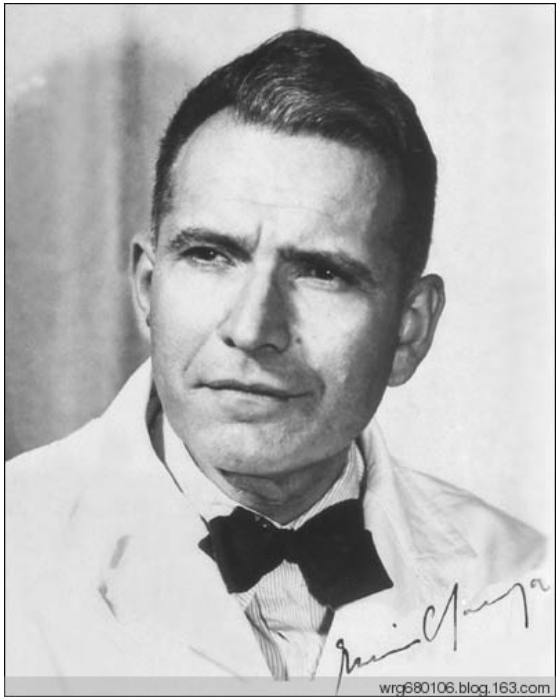
DNA □ X □□□□□

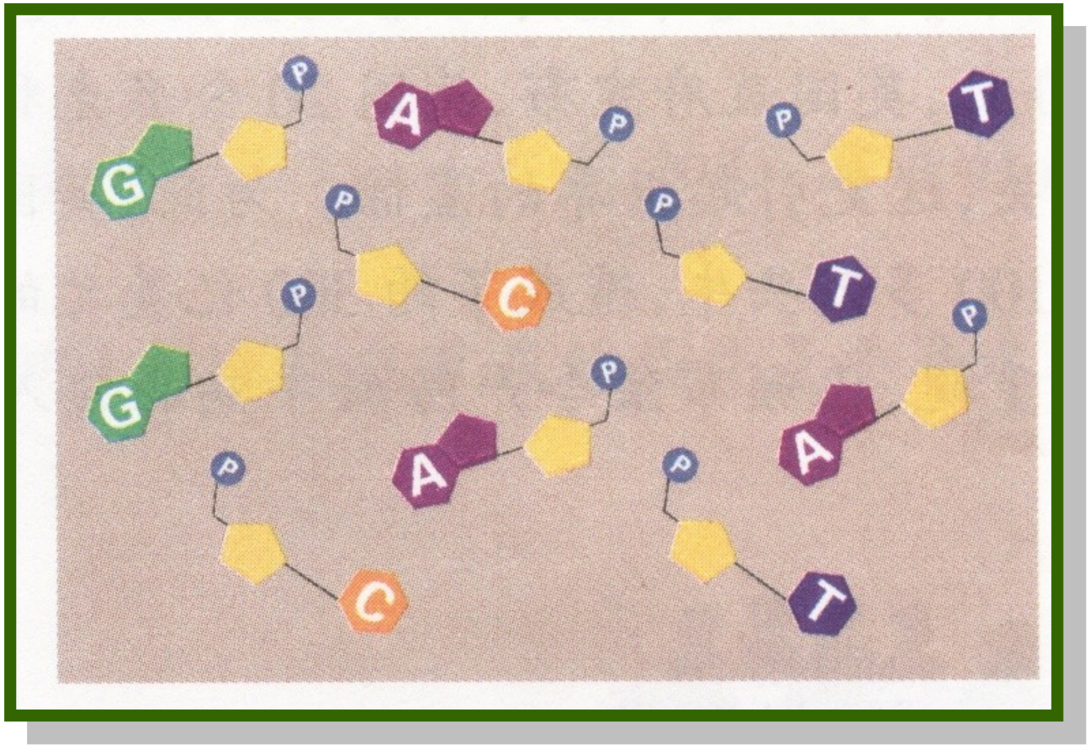




1951 □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ DNA □□
□□□□□□ DNA □□□□□□□□□□□□□□□□□□□□

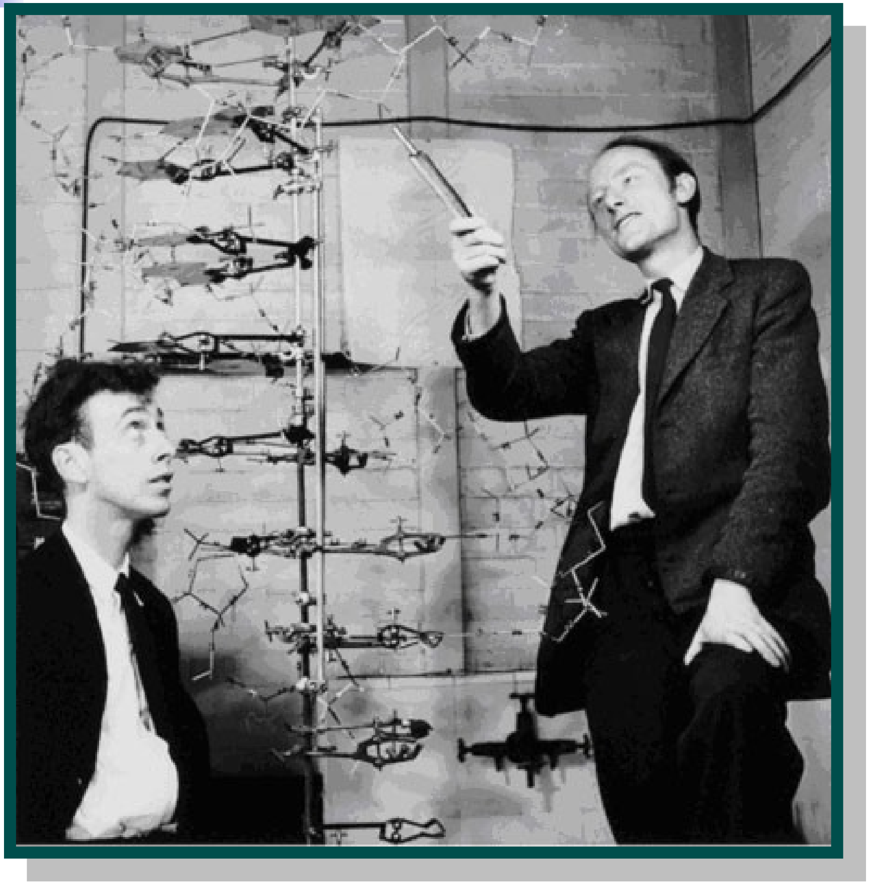
DNA [illegible]

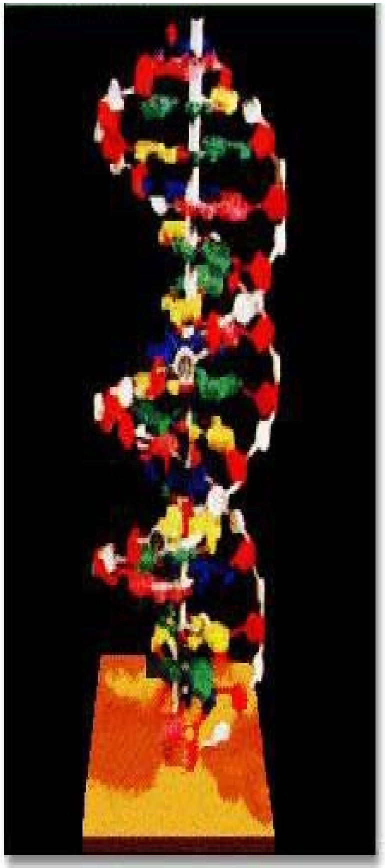




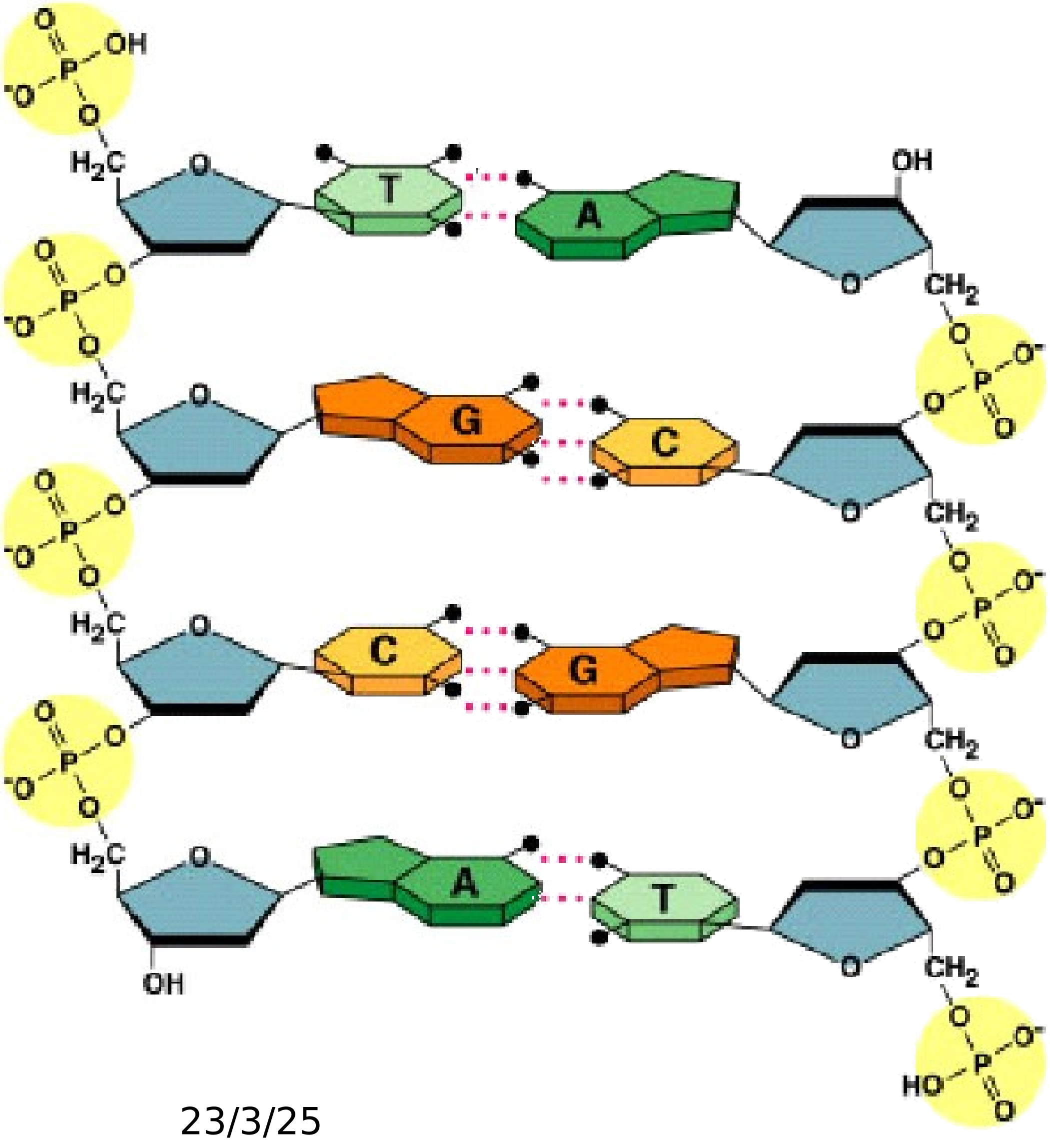
1952 [illegible] DNA [illegible] (A) [illegible] (T) [illegible] (G) [illegible] (C) [illegible]

DNA [illegible]



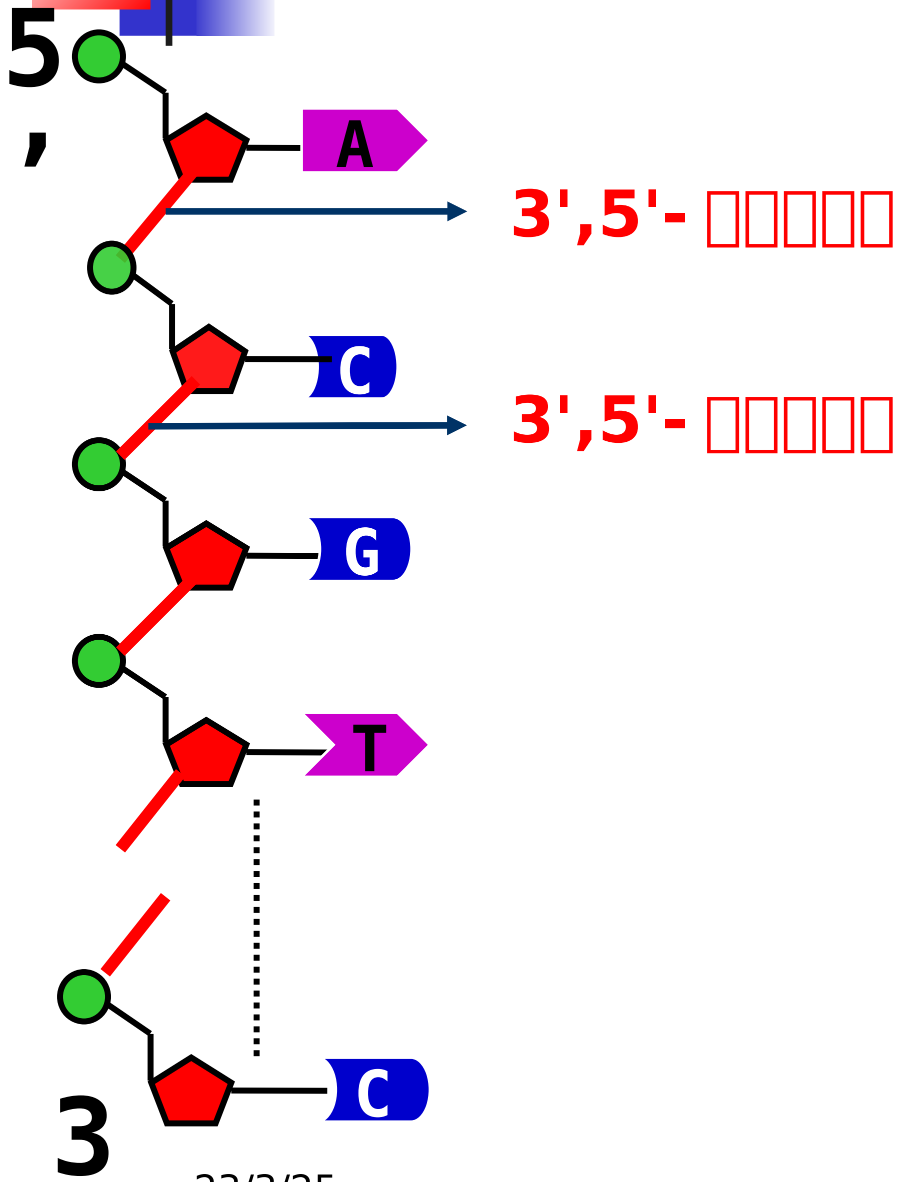


1953 [illegible] **DNA** [illegible]



T
A
G
C
C
G
A
T
OH
H_2C
CH_2
HO

DNA [illegible]



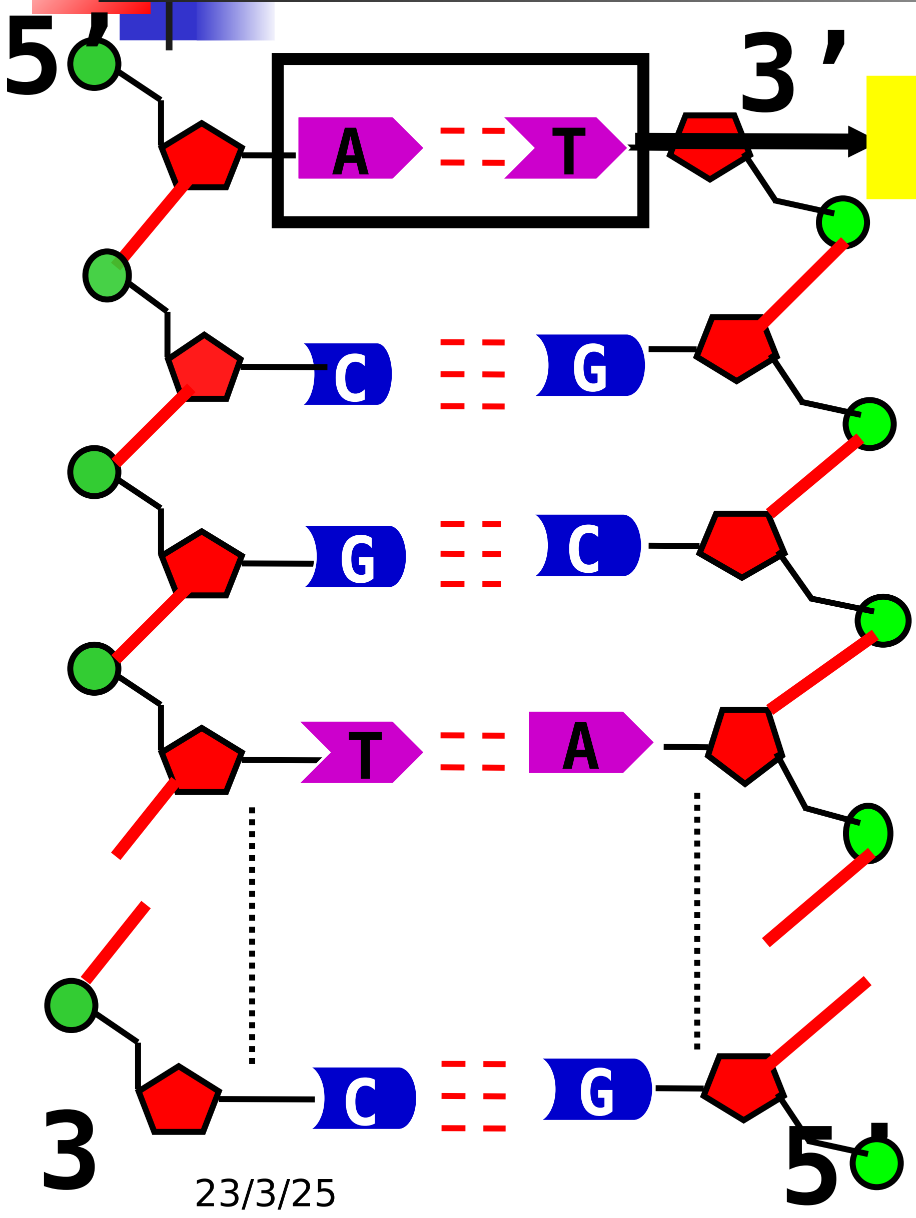
[illegible] 1 [illegible]

[illegible]

[illegible]

[illegible]

DNA



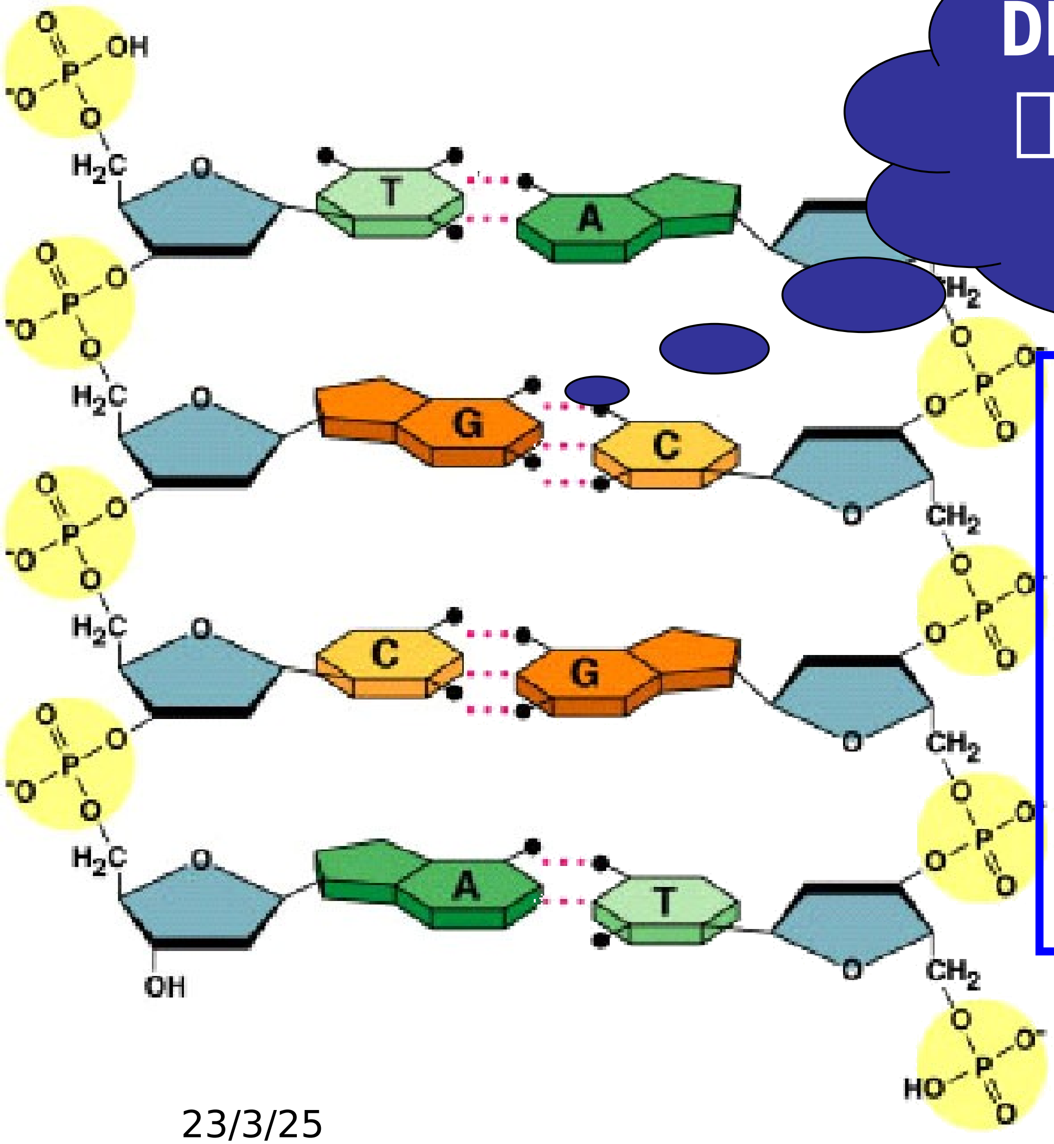
1

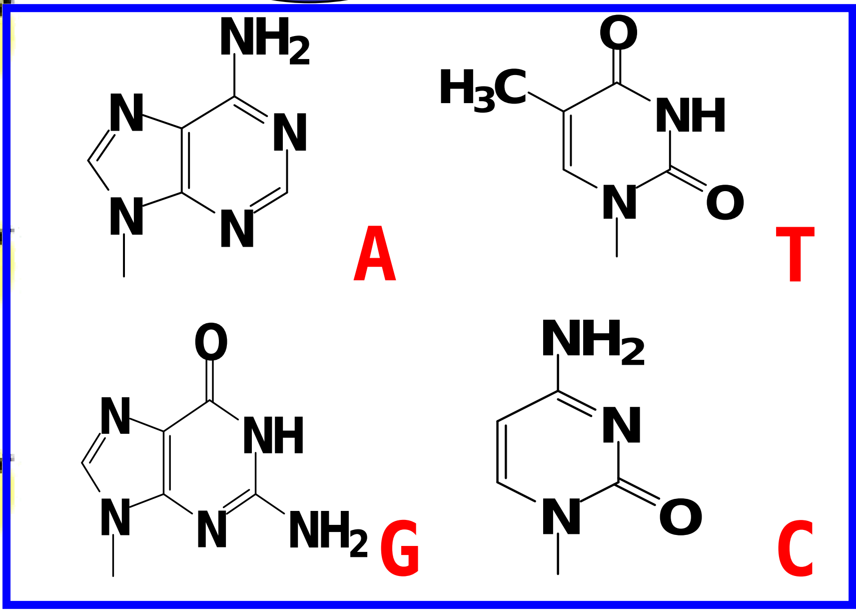
2 DNA

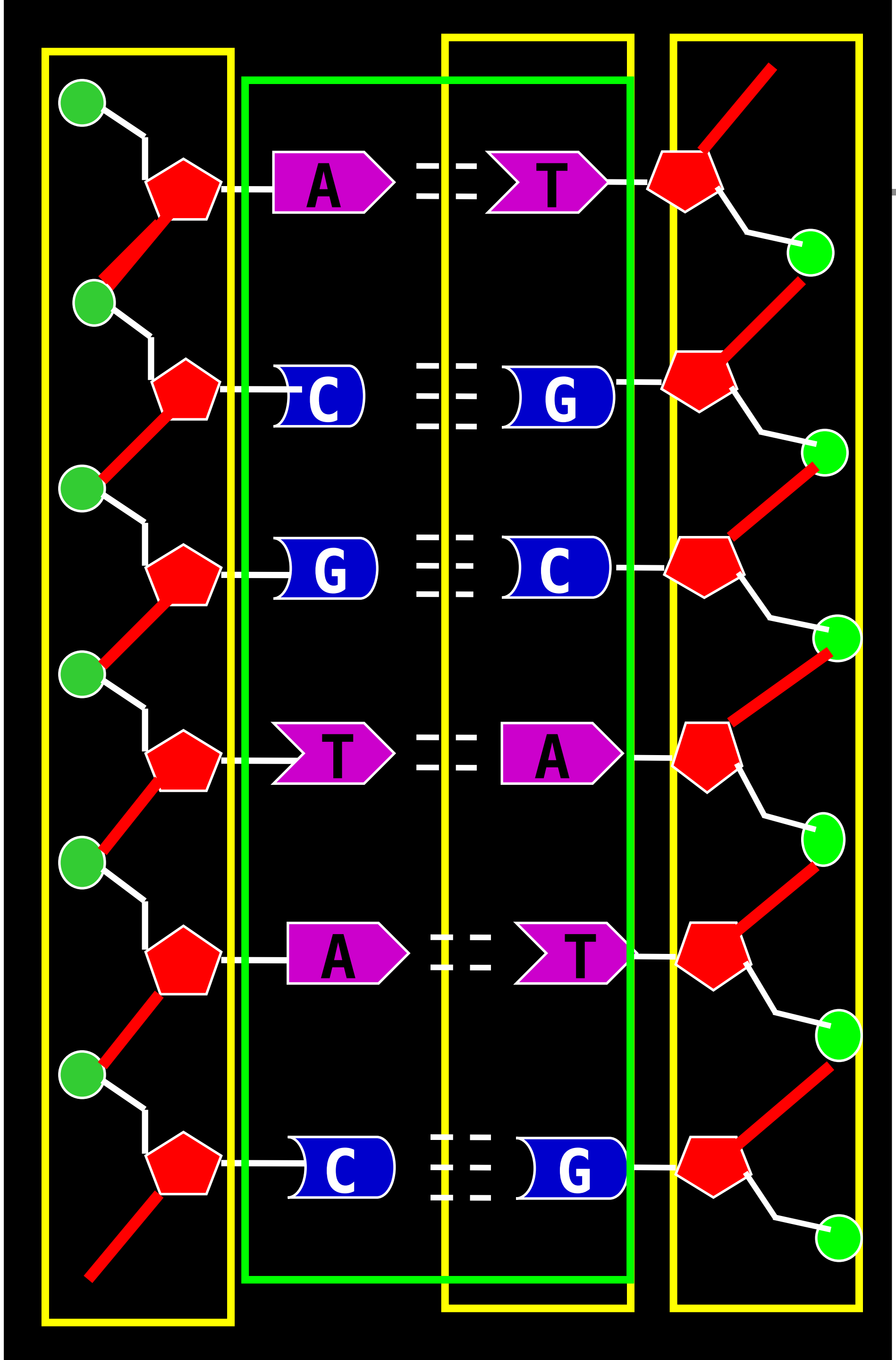
3 DNA

[illegible]

DNA [illegible]
[illegible] DNA [illegible]







DNA [illegible]

[illegible] 4 [illegible] DNA [illegible]

[illegible]

[illegible] 5 [illegible]

[illegible]

[illegible]

1 [illegible] DNA [illegible] ________________

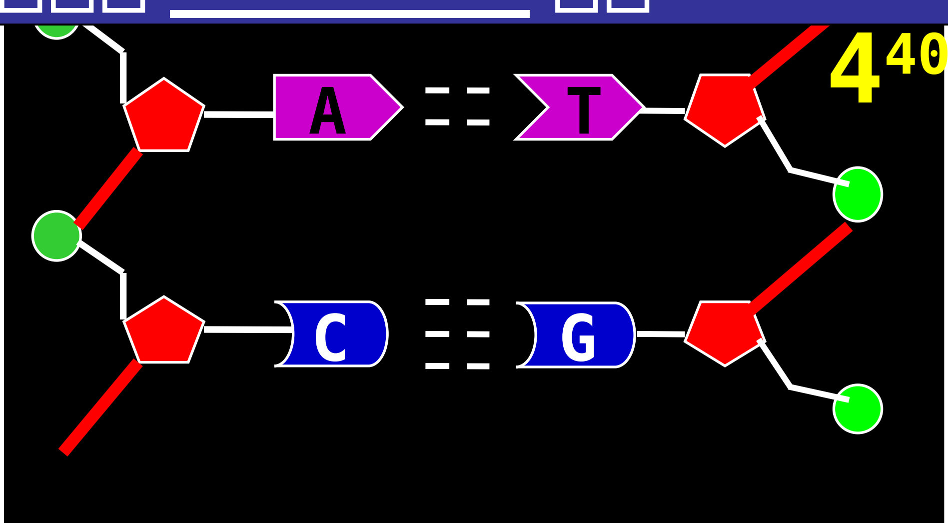
[illegible] DNA [illegible]; [illegible] DNA [illegible]

2 [illegible] DNA [illegible] DNA [illegible] [illegible] DNA [illegible] [illegible] DNA [illegible] ________ [illegible]

3 [illegible] DNA [illegible] 8000 [illegible] [illegible] ________ [illegible]

[illegible]

[illegible]



4^{4000}

[illegible]

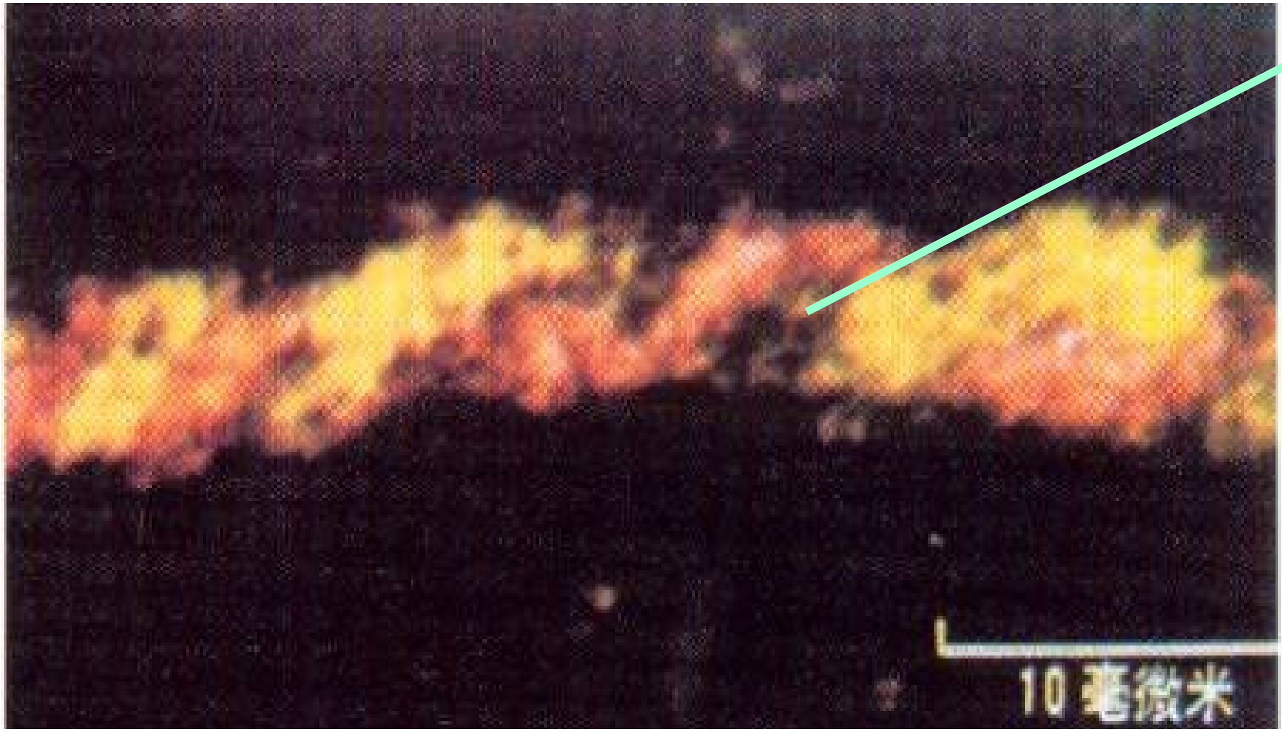
[illegible]

3. [illegible] DNA [illegible]

[illegible]

[illegible]

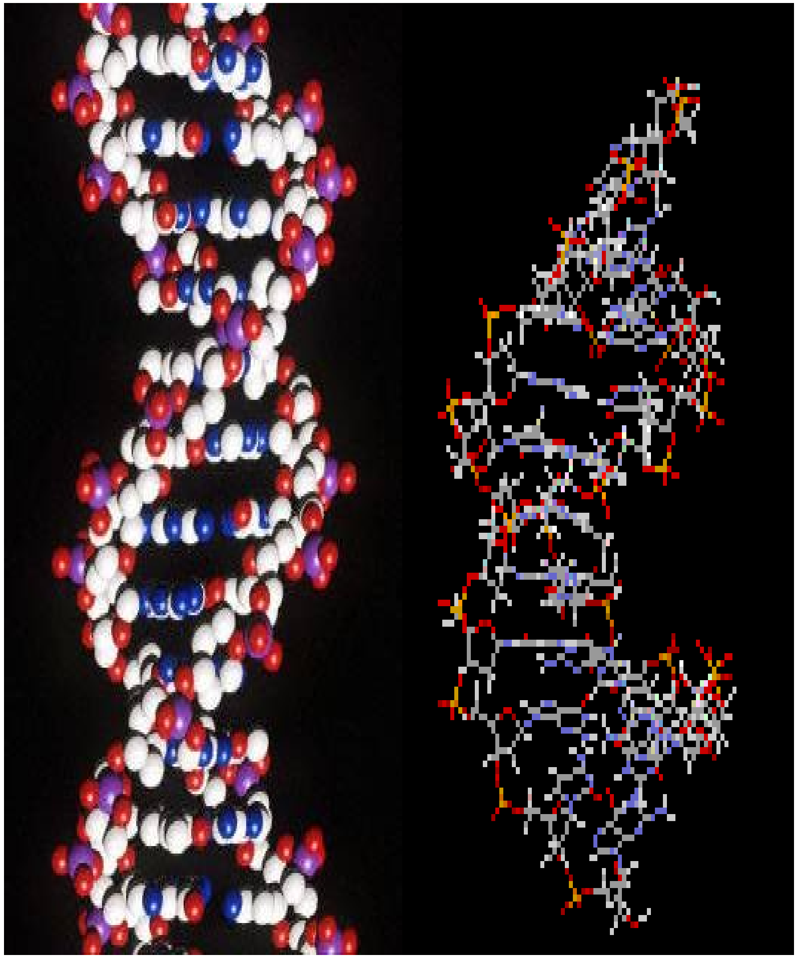
DNA [illegible]

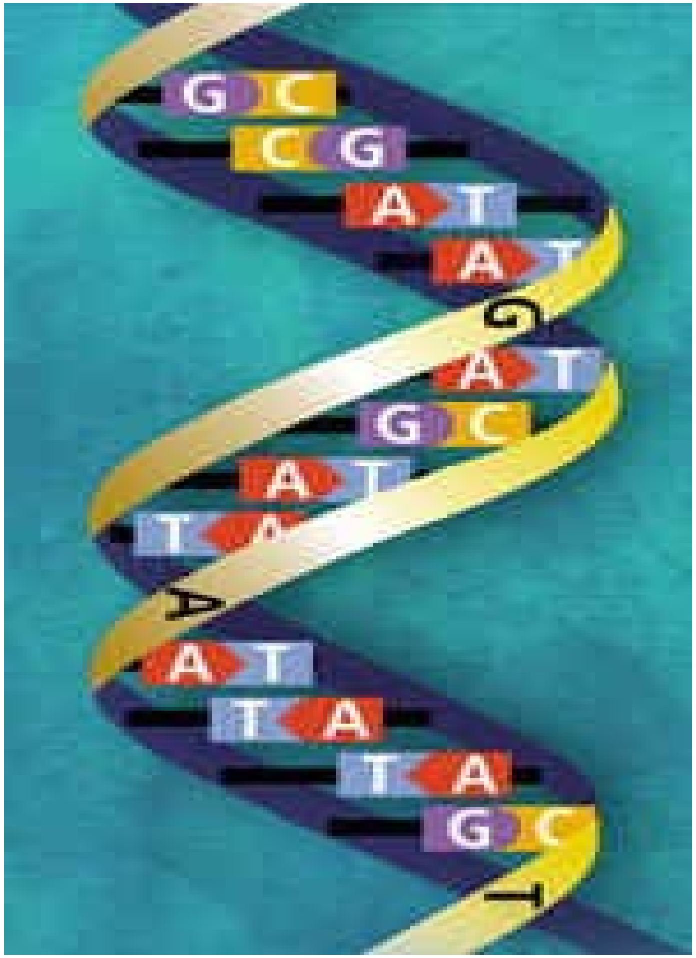


[illegible] DNA [illegible]

[illegible] DNA [illegible]

DNA □□□□□





DNA □□□□□□□□

[illegible]— DNA [illegible]

[illegible] C.H.O.N.P

[illegible] [illegible]

[illegible] [illegible] [illegible]

[illegible] [illegible] [illegible]

[illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible] [illegible]

[illegible] DNA [illegible] 2 [illegible]

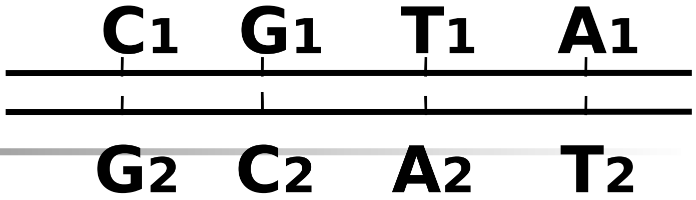
[illegible] 2 [illegible] [illegible] [illegible]

DNA [illegible]

[illegible]

[illegible]

DNA [illegible]



1 [illegible] DNA [illegible] n [illegible] ________ [illegible]

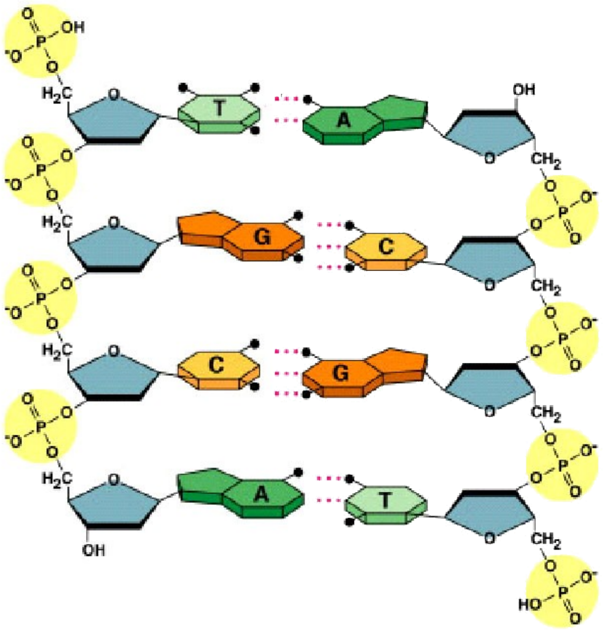
[illegible] ________ [illegible] ________ [illegible]

2[illegible]n-1[illegible]

2[illegible]n-1[illegible]

2n~3

n



[illegible] DNA [illegible]

[illegible]

[illegible]

[illegible] **DNA** [illegible]

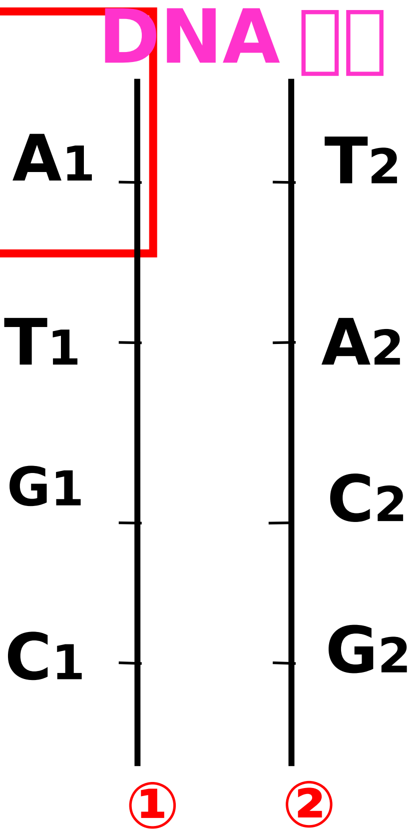
A = T [illegible] **G = C**

A [illegible] **G=T** [illegible] **C** [illegible] **A** [illegible] **C=T** [illegible] **G**

[illegible]

① [illegible] **DNA,** [illegible] **=** [illegible]

◆[illegible] **DNA** [illegible] **A** [illegible] **T** [illegible] **G** [illegible] **C**



□□

$\because$ A □ T □G □ C

$\therefore$ A + G □ T + C

$$\therefore \frac{A+G}{A+T□+C+G} = \frac{T□C}{A+T+C+G□} = 50□□$$

□

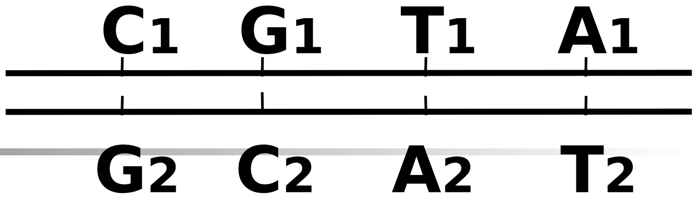
□□□□□□□□□□

$$\frac{A+G}{T+C} □□ \frac{A+C}{□T+G□} □□ \frac{T+G}{□A+C} □ \ldots\ldots = 1$$

② □□□□ DNA □□□□□□□□□□□□□□□□□□□□□□______

______□□□□□□□□□□______________ **50□**

DNA [illegible]



G [illegible] 23% [illegible] A [illegible]

27%

③□□□□□□□□□□(A+T) /(G+C)=a□□□□

□□□□(A+T) / (G+C)□□□________________

_□　　　　**a**

➢□□□□□□□(A+G) / (T+C)=b,

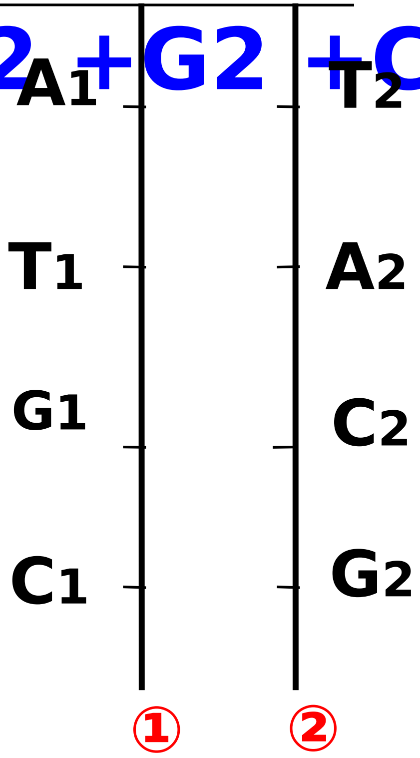
□□□□□□(A+G) / (T+C)□□□□______ **1/b**

____

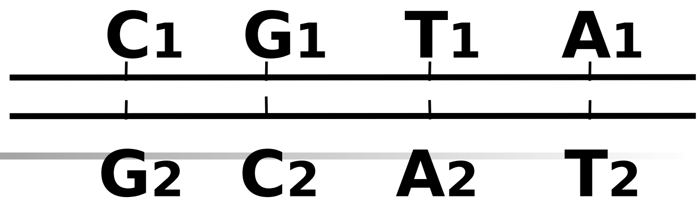
④□□ DNA □□□□ A+T □□□ DNA □□□□□□□□□□□
□□□□□□□□□□□ A+T □□□□□□□□□□□□□□□□□□
A+T □□□ DNA □□ A+T □□□

$$\frac{A+T}{A+T+G+C}=\frac{A_1+T_1}{A_1+T_1+G_1+C_1}=\frac{A2+T2}{A2+T2+G2+C2}$$

$A_1+T_1=A_2+T_2=\frac{1}{2}$□A+T□



DNA □□□□



3 □□ DNA □□□□□□□ A+G/T+C=0.4 □□□□□□□□□□□□□□ DNA □□ □□□□□□□

5/2□1

4 □□ DNA □□□□□□□ A+T/G+C=0.4 □□□□□□□□□□□□□□ DNA □□ □□□□□□□

0.4□0.4

5 □□□□ DNA □□□□ A □ T □□□□□ DNA □□□□□ 54% □□□□□□□ G □ □□□□□□□ 22% □□□□□□□ G □□□□□□□□□□□□□□□□

24%

[illegible]

6 [illegible] DNA [illegible] a [illegible]
[illegible] b [illegible] [illegible]

C

A [illegible] $b \le 0.5$

B [illegible] $b \ge 0.5$

C [illegible] $a(1/2b-1)$ [illegible]

D [illegible] $b(1/2a-1)$ [illegible]

7 [illegible] DNA [illegible] 30% [illegible] A [illegible]
[illegible] G [illegible]

40%

[illegible]

1 [illegible]

[illegible]

C

A. [illegible]　　B. [illegible]

C. T2 [illegible]　　D. [illegible]

3. [illegible] DNA [illegible] n [illegible]________[illegible] 2n [illegible] A [illegible] m [illegible]

[illegible]________[illegible]　　3n-m　　3n

4. [illegible] DNA [illegible] n [illegible] DNA [illegible]

[illegible] ______ [illegible]　　2n-2

□□□DNA□□□□□G□C□□□□□□□□□□35.8%□□□□□□□T□C□□□□□□□□□□32.9%□17.1%□□□□□□□□□□T□C□□□□□□□□□□________________

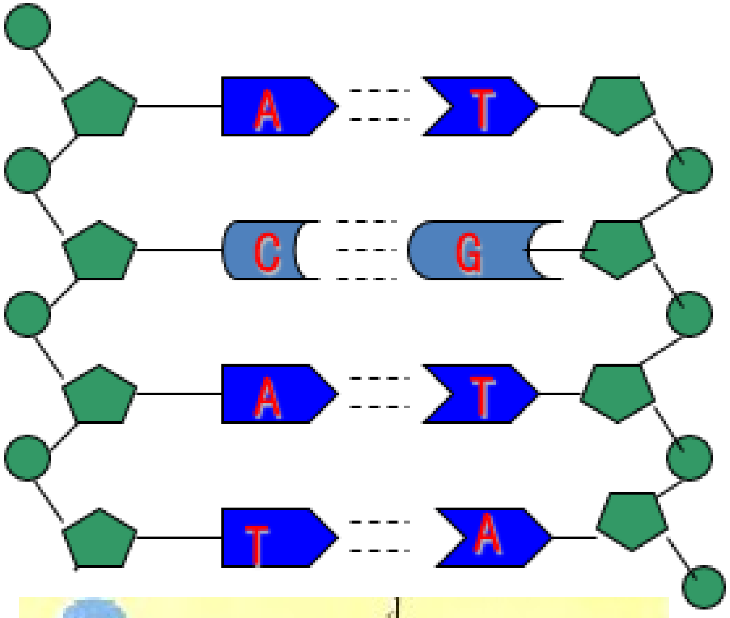
31.3%□18.7%

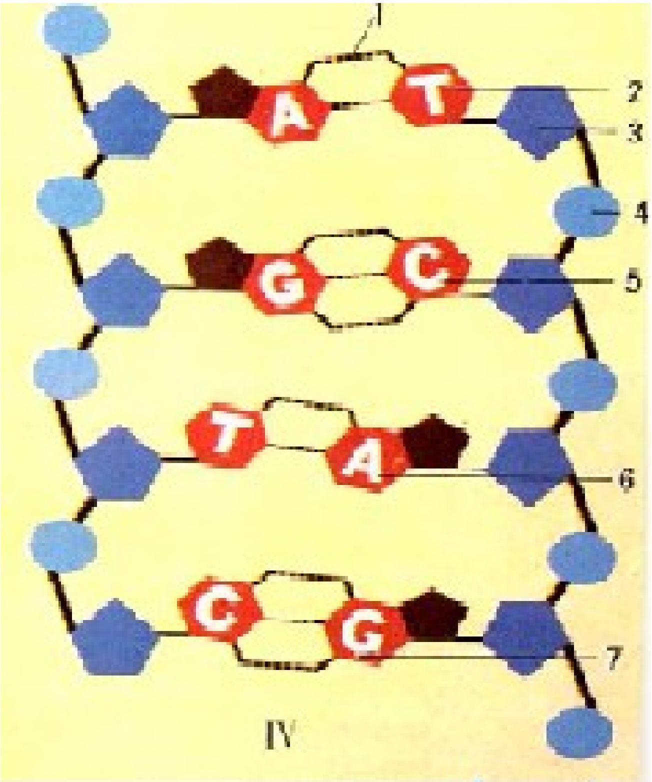
□□DNA□□□□□□□，□□□□□□□□40%，□□□□□DNA□□□□□□□24%，□□DNA□□□□□□□□，□□□□□□□□□□□□□□□________

28%

□4□7□□□□□□□□□□□□C□□□□□□□□□□□T□□
□□□DNA□□□□□□□□A□□□□□□□□30%□□□□□□
□□G□□□□7□□□□□□DNA□□□□□□□□□□□DNA
□□□□□□□DNA□□□□□□□□T□□□□□□□□45%□
□□□DNA□□□□□□□□G□□□□□□________

20%


A
T
C
G
A
T
T
A


1
A
T
2
3
4
G
C
5
T
A
6
C
G
7
IV

1. [illegible] DNA [illegible] 4 [illegible] 20 [illegible] 4 [illegible] C [illegible] 6 [illegible] G [illegible] 3 [illegible] A [illegible] 7 [illegible] T [illegible] 14 [illegible] 40 [illegible] 30 [illegible] _____ [illegible] DNA [illegible]

2. [illegible]

4

□1□DNA□□□□□□□□______□□□
□□□□□□□□□□□□□□______□□□
□2□□DNA□□□□□□□□□□□
□□□□□□□□□□□□□□A□G□
□□□□□□□□□□□□□C□T□
□□□□□□□□□□DNA□□□□
□□□□□□□□□□□□□______□

□3□DNA□□□□□□□□□□□□□□□
□□□□□P□□□□□□□□□□DNA□□
□□□□□□□□□4□□□DNA□□□□□□
□□□□□□□□□U□A□A□T□
G□C□C□G□□□“P”□□□______□

□4□7□□□□□□□□□□□□C□□□□
□□□□□□T□□□□
□DNA□□□□□□□□A□□□□□□□□30%□
□□□□□□□□G□□□□7□□□□□
□DNA□□□□□
□□□□□□DNA□□□□□□□□DNA□□□
□□□□□T□□□□□□□45%□
□□□DNA□□□□□□□G□□□□□□______□